AMENDMENT TO THE CLAIMS

- (Currently Amended) A method of decoding data comprising:
 receiving a signal comprising a plurality of bit patterns at a bank of equalizers, each
 equalizer in the bank of equalizers tuned to a different bit pattern with a
 corresponding equalization target during normal operation;
 generating pattern dependent outputs from the equalizers; and
 calculating an estimated bit sequence with a detector using the pattern dependent outputs.
- (Original) The method of claim 1 wherein the signal is received from a recording channel.
 - 3. (Original) The method of claim 1 wherein the step of receiving comprises: reading a sequence of signal samples from a channel; and passing segments of the sequence of signal samples to the bank of equalizers one segment at a time.
- 4. (previously presented) The method of claim 1 wherein the step of calculating comprises:
 - calculating a path metric for every possible state transition sequence of a bit pattern using the pattern dependent equalizer outputs according to transition information; and selecting a bit sequence corresponding to a path having the smallest accumulated path metric.
- (Original) The method of claim 1 wherein each equalizer includes a pattern-dependent filter.
- (Original) The method of claim 1 wherein each equalizer includes an adaptive algorithm for tuning each equalizer to a bit pattern during use.

7. (Currently Amended) A method of decoding data comprising:

processing a segment of a received signal in a bank of equalizers, each equalizer tuned to a different bit pattern and an equalization target to produce an equalized output for each equalizer <u>during normal operation</u>; and

detecting a bit sequence using a branch metric calculation to process the equalized output.

- 8. (Original) The method of claim 7 wherein the step of processing comprises: dividing the segment of the received signal into finite overlapped segments, and calculating an equalized output for each of the finite segments with the bank of equalizers.
- (Original) The method of claim 7 wherein the equalized output is used in sequence detection according to the bit pattern associated with the equalizer.
- 10. (Original) The method of claim 7 wherein a number of equalizers in the bank of equalizers is determined by a maximum number of possible states for a selected pattern window.
- 11. (Original) The method of claim 7 wherein before the step of processing, the method further comprising:

tuning each equalizer in the bank of equalizers to a bit pattern.

12. (Original) The method of claim 11, wherein the step of tuning comprises: selecting an equalizer from the equalizer bank; sending known data to the selected equalizer to calculate a target output signal;

calculating a difference between an output signal from the selected equalizer and the target output signal; and

tuning the selected equalizer to minimize the difference.

- 13. (Original) The method of claim 7 wherein the branch metric calculation is a square of a difference between a received signal sample and a desired target signal determined by a state transition.
- 14. (Original) The method of claim 7 wherein the equalization target is pattern-dependent.
- 15. (Original) The method of claim 7 wherein the branch metric calculation is based on a noise whitening principle when noise in the received signal is correlated.
- 16. (Original) The method of claim 7 wherein the branch metric calculation is based on a covariance matrix of noise when noise in the received signal is correlated.

17-29. (Cancelled)

30. (Previously Presented) The method of claim 1 wherein generating pattern dependent outputs includes reducing total noise in the pattern dependent outputs prior to the step of calculating. 31. (New) A method of decoding data comprising:

tuning each equalizer of a bank of equalizers to a bit pattern, wherein tuning each equalizer includes selecting an equalizer from the bank of equalizers, sending known data to the selected equalizer, calculating a difference between an output signal from the selected equalizer and a target output signal, and tuning the selected equalizer to reduce the difference;

processing a segment of a received signal in a bank of equalizers, each equalizer tuned to a different bit pattern and an equalization target to produce an equalized output for each equalizer; and

detecting a bit sequence using a branch metric calculation to process the equalized output.

- 32. (New) The method of claim 31 wherein the step of processing comprises: dividing the segment of the received signal into finite overlapped segments, and calculating an equalized output for each of the finite segments with the bank of equalizers.
- 33. (New) The method of claim 31 wherein the equalized output is used in sequence detection according to the bit pattern associated with the equalizer.
- 34. (New) The method of claim 31 wherein a number of equalizers in the bank of equalizers is determined by a maximum number of possible states for a selected pattern window.